POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
1937	h. m.	°	°	°				
June 23		+38.0	138.3	−10.0	24			U. S. Naval.
		+66.0	166.3	+28.0		97		
		+76.0	176.3	+9.0	194			
		+85.0	185.3	−13.0	582		2,895	
June 24	11 5	−78.0	9.2	+18.0		194		Do.
		−48.0	39.2	−18.5		291		
		−32.0	55.2	−12.5		824		
		−14.0	73.2	+21.0		24		
		−3.0	84.2	+8.0	12			
		+20.5	107.7	−23.0	242			
		+26.0	113.2	+10.0	73			
		+33.0	120.2	+21.0		97		
		+49.0	136.2	+12.0		533		
		+80.0	167.2	+26.0	48		2,338	
June 25	11 14	−62.0	11.9	+19.0		121		Do.
		−35.0	38.9	−18.0	291			
		−19.0	54.9	−12.0		824		
		+33.0	106.9	−23.0	206			
		+39.0	112.9	+10.0	73			
		+44.0	117.9	+21.0		145		
		+62.0	135.9	+13.0		339	1,999	
June 26	10 52	−51.0	9.8	+10.5		48		Do.
		−49.0	11.8	+19.0		97		
		−21.5	39.3	+7.0		24		
		−21.0	39.8	−17.0	194			
		−6.0	54.8	−12.0		582		
		+47.0	107.8	−23.0	194			
		+50.0	110.8	+10.5		73		
		+59.0	119.8	+21.0		194		
		+78.0	138.8	+12.0	242		1,648	
June 27	9 9	−40.5	8.0	+19.0		97		Mt. Wilson.
		−9.5	39.0	+8.0		97		
		−9.0	39.5	−17.0	242			
		+8.0	56.5	−11.0		485		
		+62.0	110.5	−23.0	194			
		+68.0	116.5	+11.0		145		
		+86.0	134.5	+22.0	242		1,502	
June 28	11 11	+3.0	37.2	−17.0		242		U. S. Naval.
		+5.0	39.2	+9.0	16			
		+21.0	55.2	−11.0		485		
		+74.0	108.2	−23.0	194		937	
June 29	11 4	−61.0	320.0	−9.0		24		Do.
		−30.0	351.0	+15.0		73		
		−11.0	10.0	+19.0		48		
		−3.0	18.0	+18.0		48		
		+18.0	39.0	−17.0		194		
		+36.0	57.0	−11.0		218	605	

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern standard time	Heliographic: Diff. in longitude	Heliographic: Longitude	Heliographic: Latitude	Area: Spot	Area: Group	Total area for each day	Observatory
June 30	10 51	−78.0	289.9	+14.0	97			U. S. Naval.
		−45.5	322.4	−10.0	12			
		−17.0	350.9	+15.0		291		
		+1.0	8.9	+18.0		48		
		+10.0	17.9	+17.0		145		
		+31.0	38.9	−18.0		194		
		+48.0	55.9	−10.0		242	1,029	

Mean daily area for 30 days, 2,587.

PROVISIONAL SUN-SPOT RELATIVE NUMBERS, JUNE 1937

[Dependent along on observations at Zurich and its station at Arosa]

[Furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

June 1937	Relative numbers	June 1937	Relative numbers	June 1937	Relative numbers
1	*Mc* 79	11	96	21	*d* 186
2	*d* 89	12	*MEacc* 134	22	*ad* 199
3	92	13	*Ec* 166	23	*Mac* 163
4	*bd* 116	14	185	24	133
5	*Wc* 128	15	*ad* 191	25	108
6	121	16	*Mabcd* 174	26	116
7	102	17	*b* 190	27	*b* 91
8	*a* 64	18	*a* 194	28	*a* 80
9	*Ecd* 73	19	185	29	*Ec* 80
10	*add* 98	20	*a* 183	30	93

Mean, 30 days =130.3.

a= Passage of an average-sized group through the central meridian.
b= Passage of a large group or spot through the central meridian.
c= New formation of a group developing into a middle-sized or large center of activity; *E*: on the eastern part of the sun's disc, *W*: on the western part, *M*: in the central circle zone.
d= Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE, *In Charge*]

By LOYD A. STEVENS

Mean free-air data, based on airplane weather observations during the month of June 1937, are given in tables 1 to 3.

The mean surface temperatures for June (see chart I) were slightly above normal over the greater portion of the country.

The mean free-air temperatures were, for the most part, near normal at all levels. The most consistent negative departures occurred along the Atlantic Coast, where at 5 kilometers departures of minus 2.3° C. and minus 2.5° C. were recorded at Norfolk and Lakehurst, respectively. At Cheyenne negative departures persisted at all levels and at Omaha, also, pronounced negative departures occurred up to 3 kilometers amounting to minus 2.3° C. at 1 kilometer. The greatest positive temperature departure occurred at Seattle, amounting to plus 2.1° C. at 1.5 kilometers. In general the mean free-air temperatures for June averaged from 3° to 4° C. higher at all levels than in May.

The mean free-air relative humidities were above normal at most stations but were below normal at San Antonio up to 2 kilometers (minus 7 percent at 1 and 1.5 kilometers) and at Seattle between 1 and 4 kilometers (minus 9 percent at 2 and 2.5 kilometers). The greatest positive departure (plus 11 percent) occurred at Omaha at all levels between 1 and 2.5 kilometers.

Monthly mean free-air barometric pressures and equivalent potential temperatures are shown in table 3. In general there was an increase in the average pressure, of June over May, of 1 to 2 mb. in the lower levels and of 3 to 5 mb. in the upper levels. The increase was most pronounced at 5 kilometers. The mean isobaric charts as drawn from the values in table 3, were characterized in the lower levels by relatively high pressure over the southeast and extreme northwest portions of the country and a trough of low pressure extending in a NE.–SW. direction across the central part of the country. The mean isobars shifted with altitude, however, and assumed approximately a W.–E. direction across the country above 3 kilometers. In the higher levels a low pressure center was located over Fargo and Sault Ste. Marie. The highest mean pressure was recorded at San Antonio at all levels. Changes in the mean pressure gradient from May to June were relatively unimportant except that there was, in general, decrease in gradient with latitude over the eastern part of the country in the higher levels.

Free-air resultant winds, based on pilot balloon observations made near 5 a. m. (75th meridian time), are shown in table 4. Along the Pacific coast from Oakland northward the resultant winds varied from the normal in a counterclockwise direction (i. e. toward the south) below 3 kilometers. The greatest variation occurred at